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Leading Article

Remodelling of Vascular (Surgical) Services in the UK

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ABSTRACT

The last few years have seen major changes in the delivery of vascular services in the UK. An increasingly elderly population with greater expectations from their medical services has challenged established methods. It also became apparent that outcomes for low volume, high risk index vascular interventions such as abdominal aortic aneurysm repair were poor in the UK compared to the rest of Europe. Other ongoing challenges were the introduction of a national aortic aneurysm screening programme and the development of vascular surgery as a separate speciality. This article details the approach taken to modernise vascular services in the UK, using a quality framework agreed by vascular specialists, which drove the structural change to move vascular interventions into fewer, higher volume centres. The introduction of modern networks is designed to maintain services in surrounding hospitals without on site vascular inpatient services. The initial effects of this service remodelling are positive, with elective aortic aneurysm mortality rates falling nationally from 7.5 to 2.4 per cent.

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In the UK, vascular surgical services have evolved to manage arterial conditions beyond the heart; cardiac services developed along separate pathways in most centres. The invention of surgical instruments and sutures that facilitated operations on arteries in the 1950s and 1960s enabled the pioneers of vascular surgery in the UK to start a service that consisted of the treatment of abdominal aortic aneurysms (AAA), carotid disease and leg ischaemia. Most were former general surgeons, and they quickly became established in many hospitals, since their colleagues were delighted to transfer management of challenging problems such as acute leg ischaemia and ruptured AAA. Inevitably, the pioneers were soon overwhelmed because a large proportion of vascular work presents as an emergency, so in the 1980s and 1990s as vascular practice expanded, they appointed colleagues to share the burden, as *ad hoc* cover of vascular emergencies became less acceptable.¹ In this way, 24/7 vascular on call rotas became established in a few larger units, where there were sufficient surgeons.

In the 1990s smaller district hospitals developed local networks, alternating nights for vascular consultant cover within a localised area. This meant that the patient usually travelled to the hospital where the vascular surgeon was on call. Most large district

hospitals had a number of surgeons with expertise in vascular surgery, who initially trained as general surgeons. Some specialised completely in vascular, but many continued on general surgery rotas, providing vascular specialist care for only a proportion of their working time. By 2008 there were over 140 hospitals providing inpatient arterial services in the UK.

Since 2001, the Vascular Society of Great Britain and Ireland (VSGBI) has funded and maintained a voluntary database of index arterial procedures (National Vascular Database – NVD). In 2008, data from the previous five years in the UK were included in a European report (Vascunet), that suggested the UK had the worst elective AAA mortality rates in Europe (7.5% versus 3.5% European average).² Although the data were provided voluntarily, they were supported by similar results from the independent Vascular Anaesthesia Society audit and the Intensive Care Database.³ There was much debate about the reason for the results, but the main conclusion was that many patients were being treated in small UK centres undertaking a limited number of AAA repairs, with poorer outcomes. Studies have consistently shown that higher volume centres produce better outcomes for many surgical procedures, and this is well recognised for aortic aneurysm surgery.^{4,5} The conclusion was that concentrating aortic surgery in higher volume centres should improve surgical outcomes.

At the same time as the Vascunet report, there was a proposal from the UK National Screening Committee to introduce screening

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for AAA in England. Approximately 5000 men die in England and Wales every year from ruptured AAA.⁶ Randomised clinical trials have shown that ultrasound screening of men over the age of 65 can reduce aneurysm-related mortality by about half over the next ten years.^{6,7} A pilot project demonstrated that it was feasible to introduce screening into a local community without overwhelming hospital vascular services.⁸ In 2008, the Department of Health agreed to fund the NHS Abdominal Aortic Aneurysm Screening Programme (NAAASP) in England, to be implemented over five years. Similar programmes are also being developed in Scotland, Northern Ireland and Wales, and by 2013 all men in the UK should be offered an abdominal ultrasound scan in their 65th year. Critics argued that the poor results for elective AAA surgery were a reason to delay the introduction of AAA screening, since there is no point in identifying men with an AAA unless the services to treat them are optimal.⁹ The Department of Health was, however, reassured by the response of the VSGBI and gave screening the go ahead.¹⁰

The VSGBI accepted the challenge of trying to halve the mortality rate for elective aortic surgery in the UK to 3.5%. The target for achieving this reduction was 2013. A Quality Improvement Framework (QIF) for improving the results of elective aneurysm repair set standards for all hospitals offering elective aortic surgery, and was endorsed by VSGBI Members,¹¹ and under-pinned by the implementation of a national Quality Improvement Programme (QIP). The key standards included management of AAA by a multidisciplinary team,¹² the availability of endovascular aneurysm repair, facilities for critical care and 24/7 vascular cover, and for the first time a minimum number of elective aortic procedures per centre. Initially it was suggested 20 elective AAA procedures should be the minimum caseload, but this was increased to 33 per vascular centre in 2012.¹³ For smaller hospitals this either meant centralising resources into a larger city centre unit, or networking.

The VSGBI describes a 'modern vascular network' as one in which all the hospitals and specialists comply with the elements of the VSGBI QIF. Most modern networks have only one intervention centre where inpatient and emergency vascular services occur. Vascular specialists within the network travel to the intervention centre to do their on call and to treat their inpatients, thus allowing on site vascular cover 24/7. However, the same surgeons also provide a full range of services to the other hospitals in the network including outpatients, day case procedures and visiting ward referrals.¹³ It is recommended interventional radiology services are offered on the same basis. This process has been supported by the Strategic Health Authorities (SHA) in England, many of whom commissioned vascular service reviews using the same VSGBI standards. It is expected that by the end of the remodelling process, the number of vascular intervention centres will have reduced to about 75 across the UK.

The NHS AAA Screening Programme has also had a part to play. As local programmes are commissioned, their vascular services go through a process of pre-implementation quality assurance using the same VSGBI standards.¹¹ Men with a screen-detected AAA can only be referred to a vascular centre compliant with the QIF. Men with an AAA are prepared to travel to centres with better outcome results.¹⁴ All men treated in NAAASP have outcome data stored on the NVD. This is linked directly to the call–recall database used by the screening programme. Patient outcomes are monitored through the national collection of data and assured by the VSGBI QIP.¹⁵

Another component of this constellation of changes to vascular surgery is the separation of vascular surgery from general surgery. Separate speciality status was agreed for vascular surgery through an Act of Parliament in March 2012, which heralds the end of the general/vascular surgeon. More importantly it means that after core surgical training, specialist vascular training will become

separate from general surgery with its own curriculum, training schedules and standards. This offers the best hope of training vascular specialists for the future who will work in close collaboration with their interventional radiology colleagues. Interventional radiology has become a separate subspeciality, and the future of these services is closely linked, as both aim to provide a fully comprehensive service to patients with vascular diseases.

The final change to vascular services, which is enabled by the reduction in the number of intervention centres, is that as part of the current Health Service reforms, vascular surgery and interventional radiology are expected to become part of specialised commissioning in England. Thus instead of services being commissioned according to local needs and standards, they will be commissioned using national standards. It is hoped that the national standards, as they are developed, will take account of the VSGBI QIF used by SHA Commissioners and NAAASP. They will also need to be aware of the expanding use of endovascular treatment of AAA, and the planned introduction of complex stenting across the UK.

The last few years have seen great changes in vascular services in the UK, partly stimulated by challenges such as poor surgical outcomes and the introduction of screening, but also endorsed by a specialist group trying to improve its quality and performance. This has meant a contraction of the service into a smaller number of higher volume centres to improve outcomes. Traditional surgical working patterns are being replaced by multidisciplinary working involving radiologists and anaesthetists at an early stage of care. Whilst complex in-patient work is concentrated in a single network centre, outpatient and outreach services for the entire network are provided locally so that patients attending smaller network hospitals are not disadvantaged. Introduction of these reforms has not been entirely straightforward. There has been some resistance from surgeons in smaller vascular units. They fear that hospitals are disadvantaged by removal of vascular services to bigger centres, and they are concerned at having to travel away from their base hospital to operate and be on call. This is offset by the expected improvement in outcomes for a disadvantaged patient group, and the potential for improved working conditions in larger units with less frequent on call. These changes have broad acceptance following national discussion, and a unanimous vote in favour of separate speciality status at the VSGBI AGM by the membership in 2009. The standards used to implement the changes were also agreed in a postal ballot by an overwhelming majority of Members. There has also been a process of engagement with local vascular services through regional reviews conducted under the auspices of service commissioners (Strategic Health Authorities). Similar standards will be used by the specialised commissioning teams that will purchase vascular services commencing in 2013.

There is early evidence that these changes are already starting to bear fruit. The recent publication of AAA mortality data shows that between 2008 and 2010, the elective mortality rate for AAA (over 8000 procedures) in England and Wales has fallen to 2.4 per cent.¹⁶ There is similar evidence that focussing on multidisciplinary working is also improving the quality of care to patients needing carotid arterial surgery.¹⁷ It is expected that remodelling of vascular services will help to drive improvement in the quality of care provided to patients not just with AAA and carotid disease, but also for other lower volume high risk interventions such as lower limb bypass for ischaemia and amputation.

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Conflict of Interest

None of the authors has any conflicts of interest to declare.

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